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[54] **GRAPHICS DISPLAY SYSTEM WITH VIEWPORTS OF ARBITRARY LOCATION AND CONTENT**

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[52] **U.S. Cl.** **340/721**; 340/724; 340/798; 364/521

[58] **Field of Search** 340/703, 721, 723, 724, 340/727, 747, 799, 798; 364/521

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[57] **ABSTRACT**

In this computer graphics display system, individual viewports of arbitary arrangement, number and content are produced on a video screen. The graphics content, display parameters and interviewport spacing all are specified by a set of control word sequences stored in a control table. Each sequence is associated with one scan line segment of an individual viewport, and consists of one or more control words that specify (a) the graphics image memory location of the pixel data to be included in that viewport segment, and (b) display parameters which specify how that pixel data is to be processed before supply to the video screen.

Control word display parameters and the associated graphics image (pixel) data are alternately obtained from a control/pixel memory and supplied to a first-in-first-out (FIFO) memory. At the outbound side of the FIFO memory, a controller enters the display parameters in appropriate registers. Pixel data then is serialized and processed in accordance with these display parameters, which may include color, zoom replication, and background grid insertion. After supplying the processed graphics data to the video screen, the controller supplies background control signals so as to produce an interviewport region on the video screen in accordance with the interviewport spacing specified by the control word sequences. Panning in any viewport is accomplished by altering the control word sequences associated with successive video frames so as to specify different sets of pixel data which, when reproduced in successive frames, give the illusion of image movement.

22 Claims, 9 Drawing Figures